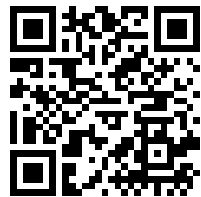

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THE JOURNAL

OF THE

ROYAL ARTILLERY

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Vol. XLIII. No. 7.

October, 1916.



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TO THE JUNIOR SUBALTERN.

BY ESTEREL.

FROM time to time various works of guidance for The Young Officer (in capitals) have appeared, whose alleged purpose was to show him the path he should tread, both on and off duty. Much of the subject matter in them is excellent, some of it is not. The average man, on turning over the pages of one of these manuals, probably finds his eye arrested by some sage piece of advice such as:—"Do not light your pipe in the middle of dinner. The Colonel may not like it." The result is that he—quite wrongly of course—votes the whole thing rot. As such books are usually not very fat, this one is just the thing to put under the leg of that ricketty writing table. There it goes and there it stays. Be it understood that I do not deny the undoubted merits of some of these works, which are no doubt written by experienced and gifted officers. That they are not better appreciated is due to a universal dislike of anything savouring of "pie-jaw", and also to the lack of knowledge on the part of the person for whose benefit they are written.

I am now going to deal with certain matters which do not, as far as I can remember figure in these guides to knowledge.

First of all—do you know everything about those ordinary everyday things which you are supposed to be *au fait* with? Do not misunderstand me, please: I do not refer to Strategy, Military History, or the pack equipment of the Bulgarian Infantry.

I mean your own job!

For instance, is it quite impossible to bowl you out in your knowledge of any of the following:—

- (1). Your gun, its carriage, sights, ammunition and stores.
- (2). The Telephone.
- (3). Getting the line for your guns by every method commonly known to the Royal Regiment. And getting it under all manner of conditions.
- (4). The once despised Hand Gun.
- (5). Shoeing.
- (6). Fitting Harness and Saddlery.
- (7). Simple Veterinary work and all about Horsemastership.
- (8). Map Reading.

Suppose you study this list for a while. Take (1): Now isn't there that business about the buffer or the breech mechanism, which

you've "never quite understood"? Get hold of it now, and down it once and for all. Read it up in the handbook and in all the other books that deal with it; then see the thing taken to pieces at the first opportunity. The artificer will, as a rule, be only too glad to initiate you into his "mystery": it isn't every day he gets the opportunity of lecturing to an officer. But don't go to him knowing nothing whatever about it—do all you can with the book first. In the service, "you cannot be expected to know everything but you *are* expected to conceal your ignorance." Now don't say that "it isn't your job to be a greaser", that "such jobs are only for artificers and anyway the No. 1 knows all about it," etc. When the said artificer beneath the shattered remains of a wagon has gone to a place where spanners are not, when Sergt. Smith and his horse are lying together by that mound of cartridge cases that marks the last position of No. 3 gun, a mile back—when these things have come to pass, you will wish you had gone into the matter in the days when you were "fed up."

Nice thought! You have let your battery down, you have let the Regiment down, and you have let the Blankshires down. That very quiet old gentleman, their Colonel, asks you whether you really cannot get your only remaining gun into action, "as even a few shells into that spinney would make all the difference." He doesn't know the gun from the buffer—but he knows now that you are an ass.

Then you will probably wish that you were dead. Probably your wish will soon be gratified, but I do not envy you your last moments, when you realize that you are the rotter of the piece, who has let everybody down.

Can you always put a telephone right without assistance? Probably not. Why not learn? I will leave you to draw your own mental picture of some situation, in which ignorance of the innards of a telephone might be, to say the least, highly embarrassing.

Did you ever take the trouble to discover what that little hook thing on the right front of the magazine of a rifle was for, and what position it ought to be in? The other day an officer killed about eight men with a rifle while getting his section out of a dirty place. He knew about that hook thing. Not an officer's job to let off a hand gun? Certainly it isn't when he is, say getting the line for his guns. But not a bad plan to adopt when people thirty yards off are attacking guns on the move.

Can you pass a really sound opinion as to whether a horse has been properly shod or not? Pity to be in the hands of that shoeing smith you don't think is much good. Even if that hard working individual is a sound craftsman, why not be top dog? Remember you don't need to be able to *do* his work (and don't ever forget what a hard game it is to learn), but you *can* see that he does it properly and carries out orders. Not a bad plan either to learn how to tack on a shoe yourself.

Have you read "Morals and Maxims for Stable Management and Horse Mastership" by A Battery Commander, and "Notes on Marching a Battery", by Major W. F. Blaker, R.F.A.? Yes! Then read 'em again.

Then about maps. Rather awkward wasn't it yesterday, when the Colonel wanted to know the best way to X? You only took ten minutes over the job and then told him that it was 17 miles via Y. And then, when he had been working on that assumption for twenty minutes, someone pointed out the Z route only 11 miles long and avoiding the big hill. What did it feel like? I fancy Colonel A. won't ask you for any information for quite a little time. I wouldn't.

I have only given you a small list of things. But you get bowled out in one or the other most days. Yes you do.

Do you see the idea? Look out for the weak spots in your knowledge and skill, and down them completely, one thing at a time.

Atkins has a most expressive verb, something like "being badgered about." I forget the precise word for the moment, but you know what I mean. Johnson in his dictionary associates it with such as go down to the sea in ships.

Well that verb has done a lot of good and it has also done a great deal of harm. Every officer or N.C.O. who is worth his salt knows that a large proportion of crime, lack of keenness and bad work generally, is due to someone in authority having "badgered" the individual concerned about.

Don't do it. For pity's sake don't do it.

That is how the good of the expression comes in. Now for the harm. An officer wishes to enforce some moribund order, or he wishes to bring in a new one. Often he is deterred either because his own fears or a brother officer assure him that this measure amounts to "badgering about." A great deal of inefficiency and bad discipline can be ascribed to this.

Don't give ill-considered orders. Figure the matter out, and then if you honestly believe that real good will accrue from it, give the order and see that it is carried out. You know that it is right, you believe that it is necessary. Very good; put your shirt and boots on it, and by your strength of character and tact get it done. Done thoroughly.

Strength of character + determination + tact = Power to command.

That formula is even more necessary to you than our old friend the "Six Rule".

Do you command your Section? Or are you merely *in* it? Make quite sure about this in your own mind. Have you got that Grip? If you have not, then you are merely a rather unreliable means of transmitting orders which you are incapable of enforcing. Your men size you up very quickly and, as a rule, with painful accuracy. If you are only *in* your section they will tolerate your presence and your occasional interference with cheerfulness. But it is to the Major and to the B.S.M. that they will look for the driving power. If on the other hand you have that grip, your Section is the definite complete unit that it ought to be, ready to answer its helm either as a part of the battery, or on those happy occasions when you are sent off with it on your own.

There are some Majors who like to attend to every detail themselves. I hold no brief for such, except to remark that often they

have been extremely good subalterns. If it is your fate to serve under such a man, study his methods and carry them out in their entirety. The probable result is that as your Section and your control of it grow more and more efficient, so you will be left more and more to run it yourself.

Don't try to bluff your Major or your Colonel. You are bound to be found out, and then your last state will be very much worse than the first. With regard to inspecting officers—but no! My identity may be discovered and I simply cannot give my own methods away.

If asked a question which defeats you, do not always say "I don't know". When the occasion appears suitable, say instead "I'll find out, Sir", and do so as soon as possible. Without getting "inspection fever" or any of the complaints allied to it, you may yet endeavour to anticipate likely questions and to have the answers ready.

It is bound to happen now and then that the C.O. will give orders direct to your Nos. 1 etc. in your absence. Make it very clear to everyone in your section that such orders must be repeated to you at the earliest possible opportunity. Probably the first time you will not be told, until you are caught out from ignorance of the order. Then, after parade, deal swiftly and surely with the offender.

Then there is the question of Loyalty. Have you considered the question? People are apt to think of it as an expression to be reserved for Zulus, Sikhs and suchlike. Some day the British public may realize what the Army, and so the Empire, owes to the late Lt.-Col. G. F. R. Henderson. This is what he has to say about loyalty in "Notes on Wellington" ("The Science of War," 1905).

"... he (Wellington) left to the army a special legacy. Throughout the whole of his career he had been the most obedient of subordinates. Loyalty to his superiors, whether statesmen or soldiers, was the first rule of his life. Whether he approved their action or not, he invariably supported them, and he never permitted himself to criticise. The most bitter remark he ever made was after the battle of Vimiero, when the interference of a stupid superior, who had just come upon the field, held him back from a pursuit which must have proved decisive. 'Gentlemen,' he said, turning to his staff, 'there is nothing left for us but to hunt red legged partridges'. Further than such caustic speech he never went. That a soldier should criticise his superiors, either in public or in private, did not square with his ideal of an officer and a gentleman. In the age in which we live it is well sometimes to think of these things. It would be untrue to say that loyalty has diminished, nor is there any lack of patriotism. But it is impossible to deny that a most mischievous spirit is abroad. . . . while to vilify those in high places, the great functionaries of the realm, is held to be no longer a stain on the honour of an Englishman. It may be useful, then, when such doctrines find advocates, to remember the example of Wellington, and to determine that whatever may be the case elsewhere, the army will still preserve the same traditional loyalty, the same reverence for authority, as did the greatest soldier of us all."

You don't always in your own heart approve of, or agree with, your Major's orders and actions. Remember how only this morning he would insist on watering at that rather muddy-looking pond, although you showed him that clear stream on the other side of the road.

It was such ridiculous nonsense—you suppose he did it just because you suggested something different. Sheer d—d obstinacy! The farrier too remarked to you "looks more like pea soup than water Sir! Why can't the Major let us water over there?" Did you sympathise with him in word or in manner? If you did, you were grossly disloyal. Or did you, Second Lieutenant Jones, an officer loyally supporting his C.O., reply swiftly and coldly with an order to go and see about that sick horse in D subsection? The farrier, who is probably a most excellent man, has had his lesson, efficiently administered without any offensive language on your part. You have been loyal, you have enforced discipline, and incidentally you have gone up a notch in the esteem of an N.C.O. who is a much older soldier than yourself. You didn't know that your Major wished to be ready to move off again quickly—you thought there was plenty of time. He saw at a glance that he could only water one team at a time at your stream, with its bad approaches, but that the whole battery could drink at one time out of the pond. Why couldn't he tell you? My friend, why the devil should he? Will you only obey his orders if he explains them?

You often hear officers criticising the actions of their superiors. Isn't it, as a rule, a singularly cheap and nasty way of showing how clever the critic himself is. Unless you are a very fine man you will do it too.

Try and be moderate about it.

The Major has his lucid intervals, and even the Colonel is sometimes right. Bear in mind the possibility of your being up against either of these eventualities.

Don't wash your dirty linen in public. Even in the remotely improbable event of your having to serve under an officer whom you cordially hate and possibly also despise—even then let other people get the strong impression that you and everybody else in the battery consider him the pattern of all civil and military virtues. They know. They size him up, and what is better they size *you* up for the loyal gentleman that you are.

Do you identify yourself sufficiently with your men? It appears that in one army (one or more components of which is nowadays T in the triangle TOB) officers and men live in separate water-tight compartments. You know what the result in their case is. It must be a strong excuse that will justify your being absent when your section or your battery is taking another team on at any game. This applies even if you don't play yourself. Go and see your men in hospital, and make sure that they are able to obtain such things as are permitted. More especially tobacco.

Never go into the stables, barrack-rooms, tents, etc. of another section, without at the time obtaining the permission of the section commander. Unless of course you are Orderly Officer, or in case of

emergency. If neither the Major nor the Captain are in Stables, don't go "coffee-housing" with the subaltern in the next section. Stay in your own place. The story of that dance last night, or of yesterday's run with the hounds will keep. Discipline won't—like the poor it must be always with us.

Don't try and score off the other sections. Play for your side i.e. the Battery. As someone has put it, you must command "the best section of the best battery of the best brigade"—to which I would add "of the best regiment of the best army." In your very proper desire for esprit de corps, do not forget "esprit de l'armée" which is very nearly quite as important.

Perhaps it is more important.

July, 1916.



"ALL THE WORLD'S AIRCRAFT, 1916."

A REVIEW BY BRIG.-GENERAL F. G. STONE.

Mr. Fred T. Jane, the founder and editor of "All the World's Aircraft" died suddenly at Southsea on March 9th of this year, leaving his incomplete edition of this famous book of reference for the year 1916 to be finished by the technical Editor Mr. C. G. Grey (editor of "The Aeroplane") who had been working in collaboration with him. Those who had hitherto, looked eagerly every year for the appearance of this truly remarkable compilation, feared that the lamented death of Mr. Jane would deprive the world in future of the standard work to which all who were interested in aircraft had been accustomed to refer since the appearance of the first issue in 1912: but fortunately this has not been the case. Owing to Mr. Jane having secured the services of Mr. Grey as technical editor, the 1916 edition has now made its appearance, and we may rest assured that much as the death of the founder may be deplored, the book will lose nothing of its value in the able hands in which it has been left: Mr. Grey, in his preface modestly writes "His (Jane's) portion of the work was nearly completed when he died, though he carried so much of his plans in his head, that I fear I may not have completed the work just as he would have liked it" and concludes "One can only hope to carry on his work as well as he began it, and to make "All the World's Aircraft" a perpetual monument to his memory."

To bring out a book of this sort during a great war, is an astonishing performance, and it may be doubted whether it could have been done by anyone except the editors who undertook it; each of them had separately built up a system of foreign correspondents, which when brought into collaboration proved a veritable gold mine of information, reliable and up to date to a very much greater extent than would have been believed possible under the circumstances.

It may be said at once in regard to British aircraft of new design, or embodying novel features, since August 1914, that very little information is given: as we turn over the beautifully illustrated pages, replete with notes and statistical information, we constantly come across the passage "The firm has been engaged on machines of their own design to Admiralty (or War Office) order: consequently figures as to size cannot be given. It is however possible to illustrate various types of seaplanes (or aeroplanes) which appeared prior to the war, and which have been used with marked success during the war."

Or again, after giving some pre-war records of certain types of machine—"Performances far surpassing these were put up early in 1916, but details must not be given."

No. 7. Vol. XLIII.

The arrangement of the book as a work of reference leaves nothing to be desired: it is divided into—

Part A. Aeroplanes and Airships of the world

Part B. Historical aeroplanes of the last fourteen years.

Part C. The World's aero-engines.

In Part A, each country is given in alphabetical order, aeroplanes being given first, and dirigibles second place: again alphabetical order is preserved in giving the description of each machine.

The section devoted to each country in Part A, has a list of the Aerial Societies, Aerial Journals, and Principal Flying Grounds on the first page; this is followed in some cases by a list of pilots, which in the case of Great Britain, shows date of obtaining certificate, machine used and place where qualifying flights took place. Then follows for each country, a brief sketch of the history of its aviation development, together with notes on the organisation, administration, and establishments of its air services.

As regards Austria, we are informed that "At the end of July 1914 there were 60 monoplanes and 50 biplanes," and that "the majority of aeroplanes used by the Austrians on active service have been of German make, and have frequently had German pilots: and that in respect to dirigibles, there was in existence one Zeppelin of 450 h.p. and 47 miles per hour speed, and that six more were projected of 600 h.p. and 60 miles per hour speed; that three have been destroyed during the war, and that sundry airships have been lent by Germany and Austria.

As regards Germany, we are informed that 120 monoplanes were bought in 1913, and that in 1914-15 a sufficient number were ordered or bought to replace the whole of the 1913 machines, and in addition 1000 machines of standard Taube type (monoplanes) or Arrow type (biplane), "these were afterwards replaced by higher powered machines with straight planes, which are almost indistinguishable from British tractor biplanes."

Under the 1914 regulations military machines had to comply with the following conditions:—

1. Must be of entirely German manufacture, with ample and comfortable seating accommodation for pilot and passenger.
2. Design must permit of fitting bomb droppers and photographic apparatus.
3. Speed capabilities must not be less than 50 miles per hour.
4. Dimensions must not exceed 49 feet span, 39 feet long, 13 feet high, and the motor not more than 100 h.p.
5. Minimum endurance 4 hours.

Since then speed, climbing power, and endurance have all increased notably.

Of the much discussed "Fokker" we read: "Fokker, a skilful Dutch pilot, had a monoplane built by Goedecker, of inherent stable shape, without warping.

This monoplane was difficult to handle, even by clever pilots,

the military authorities ordering Fokker to abandon this model. It was offered to the British Flying Services, but being unpractical was wisely refused. He carried out successful looping flights on a monoplane similar to the Morane, but with a longer body and a modified chassis. He has during the war, developed this later type, and has supplied large numbers of it and of a biplane with the same body, to the Prussian, Bavarian, and Austrian armies. They were merely superior to the British machines of the period, in having bigger engines and in existing in quantities, while the British were considering new types.

The later type monoplanes are credited with having fixed cylinder vertical engines of 160 h.p. or even more."

The section devoted to German Dirigibles is deeply interesting; the construction of Parseval, Schutte-Lauz and Zeppelin is briefly explained, and dimensions of all airships up to the end of July 1914 is given: it is stated that "at the end of July 1914, the total of Zeppelins built, from the beginning was 26, of these 12 or 13 had come to grief in various ways." Subsequently to the declaration of war it is estimated that 54 Zeppelins had been constructed, of which 14 were destroyed or became unserviceable, leaving 40 available in February 1916. The section devoted to Zeppelins, naturally gives no information regarding the new fish shaped Zeppelin which is divided into only four internal gas containing compartments, this construction making the whole proportionately lighter and therefore capable of carrying more useful load, but at the same time rendering the vessel much more vulnerable, as the destruction of a single compartment would suffice to bring her down. As this design is believed to have been perfected since the volume went to press, it would clearly not have been possible to include it.

There are several excellent illustrations of German Dirigible sheds of different types, together with a list of all the sheds at various stations, with dimensions given in almost every case. It is believed that the Schutte-Lanz rigid dirigible works are working in co-operation with Count Zeppelin for the production of the latest types of rigid airships which are known under the generic term of "Zeppelins."

As regards Turkey we read that "In April 1913, 50 machines were reported ordered from Germany; this report still persists; but only a dozen or less machines seem to have had any actual existence, these include a Curtiss flying boat. An order was actually being placed for 30 Nieuport seaplanes, but none appear to have been delivered. The effective force in September 1915 was perhaps not large, but it was uncommonly effective, as those who have returned from the Dardanelles bear witness. From the recklessness of some of the pilots it is thought that they are Turks, as their gallantry in attack scarcely suggests the usually cautious German aviator. A few of the very highest class German machines were sent to Turkey, for some of those in use were undeniably superior to the French and British seaplanes there."

Part B is really most fascinating. Under the head of "Historical Aircraft"—An attempt has been made to include photographs of the

aeroplanes of past years, which for one reason or another have 'made history' in their day" "while many are merely freak machines, which in the light of present knowledge seem ridiculous, the germ of modern practice is to be found in many other aircraft, illustrated in this cemetery of dead ideals; and it is worth noting that more than one constructor, who is among the leaders in the air to-day, commenced operations with machines which were entirely freaks." In this part we find the Ornithopter or flapping-wing machine, the gyroplane, and helicopter; also the first Wright aeroplane, the Voisin, Bleriot, and the beautiful Antoinette, all of which were completely successful in flights; and many others too numerous to mention, but each of which has its particular value in the ordered procession of aerial evolution.

Part C gives "as far as possible a complete list of all the aero-engines of any importance", illustrations of which are given in almost every case, together with principal dimensions.

The volume concludes with "Some notes on aircraft and their component parts, which are most instructive and interesting. There is an excellent alphabetical index of advertisers, in addition to the index of aeroplanes and of dirigibles.

This book of reference is as essential to all who are interested in aircraft, as Whittaker's Almanack is to the general public.



IMPROVISED PERISCOPE FOR USE IN PLOTING ROOMS NOT CONNECTED WITH AN OBSERVING STATION.

BY MAJOR HAROLD E. CLOKE, COAST ARTILLERY CORPS, U.S.A.

(Re-printed from the "Journal of the United States Artillery" July—Aug., 1916).

THE device herewith shown was constructed at this post (Fort Flagler) with the material on hand and by post labor. Since using it in the plotting room, it has been found of immense benefit to the plotter in keeping him informed as to the course of the target.

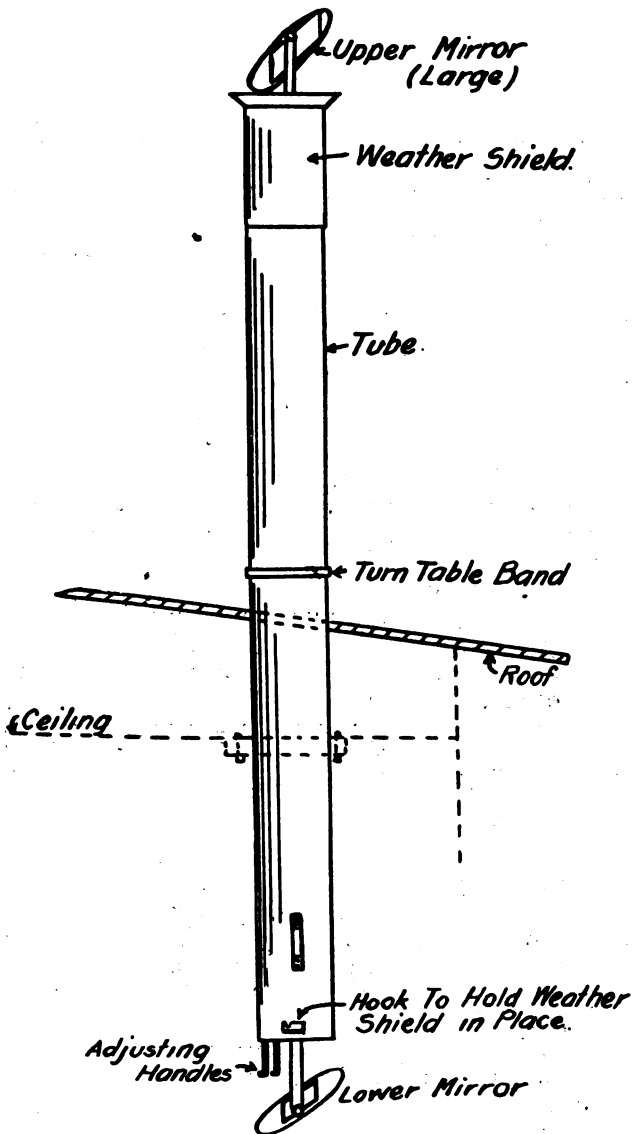
The range officer could operate it and observe the course of the target through field glasses. Any slight change in the target's course can be readily observed and the plotter can be immediately informed so that his next prediction will be more liable to fall on the "prolongation line" of the course.

This is the essential principle of reliable predicting in vessel tracking and it was thought that when this device was designed, though old in principle, it was particularly adapted for this use in the plotting room.

For example, it has been found that many errors in predicting have been caused by a change in the course of the target, such a change being entirely unknown to the plotter and there being no way for him to know the same except through information furnished him by observers. The error of predicting on a line in prolongation of previous plottings will be greatly reduced if the time interval be reduced. With the thirty-second interval, however, or even a twenty-second interval, appreciable errors occur in finding the predicted point when the target is going at high speed and frequently changing course. The periscope idea was suggested in preference to the message relay method from observer to plotter on account of its *simplicity* and *directness* of application, and avoidance of message relays through telephones.

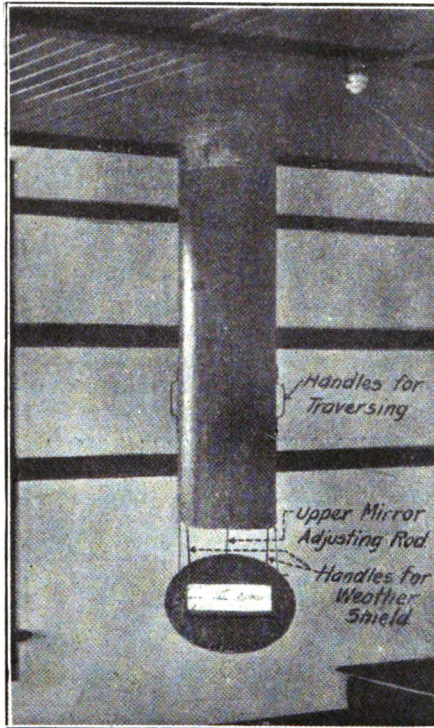
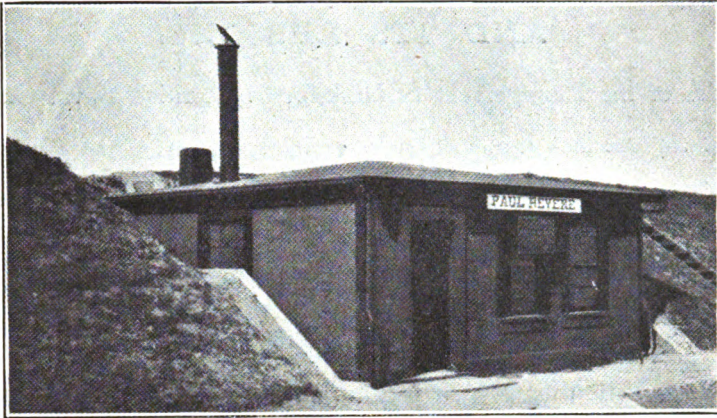
The periscope operator should use field glasses in case it is non-telescopic (such as shown in this design), and when he observes the target changing course he would inform the plotter accordingly. For example, "Target changing course about ten degrees toward datum point 6."

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This, to be sure, is not a *mathematically accurate method* but the periscope is a good, reliable, *practical* instrument and one easily constructed for any battery at any post.

In addition to the above use, the periscope in the plotting room permits of a good view of the effect of fire and, at the same time, the officer in charge can see the whole field of view—even the men at the guns, if the guns be in front.



The cost of such a device is very small. The tubing is of ordinary ventilator piping, about 12 inches in diameter. The mirrors are plate glass. The height depends upon the depth of the plotting room below the parapet. The whole instrument can be constructed by post labor, and the roof fitting done by Engineer Department employees.

THE GREAT NORTH SEA BATTLE AND ITS LESSONS.

Tactics of the Engagement as Described by British Naval Officers.

(Re-printed from the "Journal of the United States Artillery" July—Aug., 1916).

[The only connected and understandable description of the Battle of the North Sea is that given by the *Glasgow Herald* and cabled in full to the *New York Times* of June 6th. It has all the earmarks of being written by one or more naval officers, and it contains many intimate touches, which at once suggest an eyewitness possessed of thorough experience in the handling of ships and fleets. The fact that, if the manoeuvres of the various phases of the battle are plotted out they piece together and form a logical sequence of events from the first gun to the escape of the German fleet by night through a gap in the British line, and that the story agrees closely with the Admiralty reports, is strong evidence that, in its main features, the description is substantially correct. We give the account verbatim. The diagrams, which have been drawn in this office, are based strictly upon the facts given in the article.

It should be understood that, in these diagrams, which illustrate the various phases of the engagement, the British ships are shown in full black and the German in outline.—EDITOR.]

First Phase, 3.45 p.m.

"Beatty's battle royal cruisers, consisting of the *Lion*, *Princess Royal*, *Queen Mary*, *Tiger*, *Inflexible*, *Indomitable*, *Invincible*, *Indefatigable*, and *New Zealand*, were on a southeasterly course, followed at about two miles distance by the four 'Queen Elizabeths.'

"Enemy light cruisers were sighted and shortly afterwards the head of the German battle cruiser squadron, consisting of the new cruiser *Hindenburg*, the *Seydlitz*, *Derfflinger*, *Lutzow*, *Moltke*, and possibly the *Salamis*.

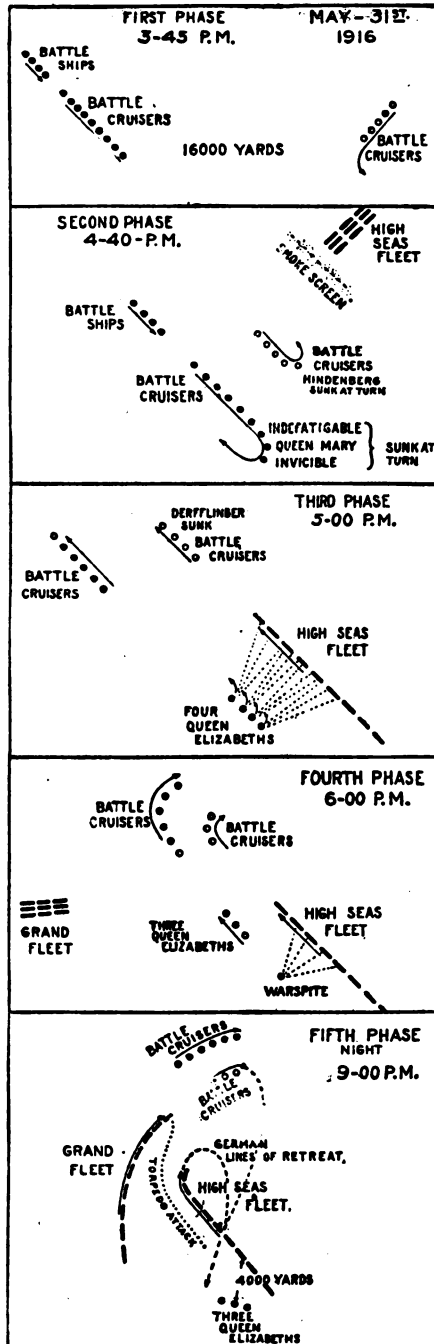
"Beatty at once began firing at a range of about 20,000 yards (12 miles), which shortened to 16,000 yards (9 miles) as the fleets closed. The Germans could see the British distinctly outlined against the light yellow sky. The Germans, covered by a haze, could be very indistinctly made out by our gunners.

"The 'Queen Elizabeths' opened fire one after another, as they came within range. The German battle cruisers turned to port and drew away to about 20,000 yards.

Second Phase, 4.40 p.m.

"A destroyer screen then appeared beyond the German battle cruisers. The whole German High Seas Fleet could be seen approaching on the north-eastern horizon in three divisions, coming to the support of their battle cruisers.

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"The German battle cruisers now turned right round 16 points and took station in front of the battleships of the High Fleet.

"Beatty with his battle cruisers and supporting battleships, therefore, had before him the whole of the German battle fleet, and Jellicoe was still some distance away.

"The opposing fleets were now moving parallel to one another in opposite directions, and but for a master manoeuvre on the part of Beatty the British advance ships would have been cut off from Jellicoe's grand fleet. In order to avoid this and at the same time prepare the way so that Jellicoe might envelop his adversary, Beatty immediately also turned right round 16 points so as to bring his ships parallel to the German battle cruisers and facing in the same direction.

"As soon as he was round he increased to full speed to get ahead of the Germans and take up a tactical position in advance of their line. He was able to do this, owing to the superior speed of our battle cruisers.

"Just before the turning point was reached, the *Indefatigable* sank, probably from striking a mine, and the *Queen Mary* and the *Invincible* also were lost at the turning point, where, of course the High Seas Fleet concentrated their fire.

"A little earlier as the German battle cruisers were turning the 'Queen Elizabeths' had in similar manner concentrated their fire on the turning point and destroyed a new German battle cruiser, believed to be the *Hindenburg*.

"Beatty had now got around and headed away with the loss of three ships, racing parallel to the German battle cruisers. The 'Queen Elizabeths' followed behind, engaging the main High Seas Fleet.

Third Phase, 5 p.m.

"The 'Queen Elizabeths' now turned short to port 16 points in order to follow Beatty. The *Warspite* jammed her steering gear, failed to get around, and drew the fire of six of the enemy, who closed in upon her.

"I am not surprised that the Germans claim her as a loss, since on paper she ought to have been lost, but as a matter of fact, though repeatedly straddled by shellfire with the water boiling up all around her, she was not seriously hit and was able to sink one of her opponents. Her Captain recovered control of the vessel, brought her around, and followed her consorts.

"In the meantime the *Barham*, *Valiant*, and *Malaya* turned short so as to avoid the danger spot where the *Queen Mary* and the *Invincible* had been lost, and for an hour until Jellicoe arrived fought a delaying action against the High Seas Fleet.

"The *Warspite* joined them at about 5.15 o'clock, and all four ships were so successfully manoeuvred in order to upset the spotting corrections of their opponents that no hits of a seriously disabling character were suffered. They had the speed over their opponents by fully four knots, and were able to draw away from part of the long line of German battleships, which almost filled up the horizon.

"At this time the 'Queen Elizabeths' were steadily firing at the flashes of the German guns at a range which varied between 12,000 and 15,000 yards, especially against those ships which were nearest

them. The Germans were enveloped in a mist and only smoke and flashes were visible.

"By 5.45 half of the High Seas Fleet had been left out of range, and the 'Queen Elizabeths' were steaming fast to join hands with Jellicoe.

"I must now return to Beatty's battle cruisers. They had succeeded in outflanking the German battle cruisers, which were, therefore, obliged to turn a full right angle to starboard to avoid being headed.

"Heavy fighting was renewed between the opposing battle cruiser squadrons, during which the *Derfflinger* was sunk; but toward 6 o'clock the German fire slackened very considerably, showing that Beatty's battle cruisers and the 'Queen Elizabeths' had inflicted serious damage on their immediate opponents.

Fourth Phase, 6 p.m.

"The Grand Fleet was now in sight and coming up fast in three directions (divisions?). The 'Queen Elizabeths' altered their course four points to the starboard and drew in toward the enemy to allow Jellicoe room to deploy into line.

"The Grand Fleet was perfectly manœuvred and the very difficult operation of deploying between the battle cruisers and the 'Queen Elizabeths' was perfectly timed.

"Jellicoe came up, fell in behind Beatty's cruisers, and, followed by the damaged but still serviceable 'Queen Elizabeths,' steamed right across the head of the German fleet.

"The first of the ships to come into action were the *Revenue* and the *Royal Oak* with their 15-inch guns, and the *Agincourt*, which fired from her seven turrets with the speed almost of a Maxim gun.

"The whole British fleet had now become concentrated. They had been perfectly manœuvred, so as to 'cross the T' of the High Seas Fleet and, indeed, only decent light was necessary to complete their work of destroying the Germans in detail. The light did improve for a few minutes and the conditions were favorable to the British Fleet, which was now in line approximately north and south across the head of the Germans.

"During the few minutes of good light Jellicoe smashed up the first three German ships, but the mist came down, visibility suddenly failed, and the defeated High Seas Fleet was able to draw off in ragged divisions.

Fifth Phase, Night.

"The Germans were followed by the British, who still had them enveloped between Jellicoe on the west, Beatty on the north, and Evan Thomas with his three 'Queen Elizabeths' on the south. The *Warspite* had been sent back to her base.

"During the night our torpedo-boat destroyers heavily attacked the German ships, and, although they lost seriously themselves, succeeded in sinking two of the enemy.

"Co-ordination of the units of the fleet was practically impossible to keep up, and the Germans discovered by the rays of their searchlights the three 'Queen Elizabeths' not more than 4000 yards away. Unfortunately they were then able to escape between these battleships and Jellicoe, since we were not able to fire as our own destroyers were in the way.

"So ended the Jutland battle, which was fought as had been planned and was very nearly a great success. It was spoiled by the unfavorable weather conditions, especially at the critical moment, when the whole British fleet was concentrated and engaged in crushing the head of the German line.

"It was an action on our part of big guns, except, of course, for the destroyer work, since at a very early stage our big ships ceased to feel any anxiety from the German destroyers. The German small craft were rounded up by their British opponents and soon ceased to count as an organized body."

LESSONS OF THE BATTLE.

According to Admiral Dewey, Admiral of the Navy, U.S.A., the following lessons may be deducted:—

The most titanic clash of sea forces in the history of the world took place off the mouth of the Skagerrack, on May 31, between the German and the British fleets. From a naval standpoint this is the most interesting event in the present generation. Its importance is not so much due to the results one way or another in advantage to the contestants as in the lessons it teaches with relation to the qualifications in actual combat of those elements that go to make up the modern fleet.

In the battle of Skagerrack great armoured dreadnoughts came to grips for the first time in the history of the world. In that fight the battle-cruiser played its part for the first time in a pitched engagement. Light cruisers were in the midst of the fighting, and battled and died. Those dare devils of the sea, the destroyers, for the first time in history closed in on first-class ships in broad daylight to drive home their torpedoes and take their one chance in a hundred of surviving.

In fact, a modern first-class fleet, with its various units, went to grips with an enemy of its kind and tested its qualifications. All these fighting machines of the sea have heretofore been creations of theoretical but somewhat untried efficiency. The day of their test was May 31. The showings of that day will have much to do with the fleets of the future built by all nations of the world.

Just what happened at Skagerrack is not yet clear, and conclusions drawn from that fight are made from incomplete evidence and may easily be upset. But two weeks after the fight it would seem that something like the following happened:

Fought at Short Range.

The German fleet was feeling its way to sea, looking for an opportunity to strike a blow with conditions to its advantage. The British fleet was spread out over three hundred miles of the North Sea. The day was hazy and a ship could not be made out more than six miles.

This necessarily short range was to the liking of the Germans. Their fleet was concentrated. They determined to give battle.

Destroyers and trawlers make up the advance line that the British draw across the North Sea. Back of these are the fast cruisers. Still further back and subject to call are the battleship squadrons.

The advance line reported the presence of the German fleet. The British were anxious for a decisive battle. The battle-cruiser squadron immediately closed in. It was nearer than the battleships and had thirty knots of speed against their twenty, so it got into the fight first. Battle-cruisers were not intended to fight battleships, and it was suspected that German dreadnoughts were ready for action. Admiral Beatty, however, determined to attempt to hold the German fleet until the British battleships could come up. He therefore went in with his battle-cruisers.

It appears that three of his ships went to their death early in the fight because of this attempt. The *Queen Mary*, the *Indefatigable*, the *Invincible*, as dashing ships as ever put to sea, were sunk. It would seem, however, that they inflicted losses upon the enemy that made their sacrifice worth while. They evidently succeeded partially in their purpose. Some of the British dreadnoughts did not get into the fight.

But the lesson is this: Battle-cruisers, with the weight of their armour sacrificed to speed, with fewer big guns than have dreadnoughts, cannot give and take with the latter class of ships. In grips with dreadnoughts they are pretty sure to be sunk. This has been the theory of naval experts all along, but that moot question of the point to which armour should be sacrificed to speed has never before had any actual experiments upon which to base its deductions.

The battle-cruiser was crumpled up and its unfitness to play a leading rôle in naval dramas was demonstrated. The *Queen Mary*, a magnificent ship of her kind, displacing 25,000 tons, could not survive the big shells of the Germans.

The Dreadnoughts Arrive.

This was the first phase of the battle. It seems to have been after the sinking of these three ships that the British battleship squadron, led by the *Warspite*, arrived. There were four ships in this squadron, and they plunged into the midst of the fight. They appear to have found a fleet that greatly outnumbered them. They unquestionably came in for a tremendous amount of hammering. Every vessel was struck many times. The *Warspite* and the *Marlborough* both suffered many serious hits. The *Marlborough* was torpedoed. Yet neither of these ships sank, both found their way back to port and both will soon be back in the service.

Captain Phillpots, of the *Warspite*, tells a thrilling tale of the

experience of his vessel and the punishment she took. His steering gear went wrong and his ship got out of control. She plunged into the midst of the enemy fleet. She drew the concentrated fire of six of enemy battleships at one time. She ran amuck and sought to do all the execution possible. Her every gun worked to the maximum.

Yet she stood her punishment and came through. She served the purpose for which a big ship is created. She proved the fitness of herself and her class to perform the purpose for which dreadnoughts are built. She proved the correctness of the theory of those experts who have held that it is wise to sacrifice much possible speed for heavy armour and big guns.

The *Warspite* is a vessel readily comparable with our own *Texas* and *New York*. She has a similar displacement, 27,500 tons. She has eight 15-inch guns where the American has ten 14-inch guns. She is four knots faster than are the American ships and her endurance is probably less. What she did American dreadnoughts should be able to do.

The *Marlborough* is a 25,000-ton ship, of about the class of our *Arkansas* and *Wyoming*. She, too, stood a vast amount of punishment, including that of being torpedoed. This latter test of a modern battleship is very interesting. A number of fighting ships have been sunk in the present war by torpedoes, but they were mostly old vessels and without the resistance of the newer ships. The impression that a torpedo is sure to prove the undoing of the dreadnoughts has not yet been demonstrated, and the survival of the *Marlborough* tends to prove it.

Destroyers Attack in Daylight.

A third and most interesting phase of the battle of Skagerrack was the attack of destroyers on both sides. These tiny ships, which were intended to serve the purpose of a screen, to be outriders and scouts of the big ships, had currently been regarded heretofore as being incapable of attacking first-class ships in the day-time. Their method of attack was set down as being one covered by darkness or by fog. Under these conditions destroyers are intended to creep in on the big ships, unleash their torpedoes, and attempt to escape before they are sunk.

It had been known that the Germans had practised day attacks with their destroyers. This was a possible use of destroyers that neither American nor British fleets had given much consideration. In the North Sea battle, however, before darkness came on, the German destroyers descended upon the British fleet, got in close, and discharged their torpedoes. It is believed that a score of them were sunk, and it is probably true that they did not succeed in destroying any British first-class ship. They unquestionably came near getting the *Marlborough*, however, and it is not shown that such an attack did not prove strategically advisable.

It is believed that the British fleet responded by sending its destroyers into the midst of the German fleet under similar circumstances. Certain it is that something near a dozen British destroyers were lost. The returns do not yet indicate what destruction these

vessels created in the German fleet, and it is therefore not possible to draw conclusions as to whether their sacrifice should have been made. The fact remains that destroyers played a very important part in the fighting and were active throughout the engagement. The usefulness of these small ships in a great struggle such as that which took place off Skagerrack is regarded as having been demonstrated.

A point of intense interest to the general public in the first big sea fight of modern navies is the high rate of loss of life aboard ships sunk. On the *Queen Mary*, the *Indefatigable*, and the *Invincible* there was hardly a man saved. Already the United States Navy Department is receiving great numbers of letters from individuals who have suggestions to make as to devices that might be used for saving lives aboard fighting ships. These individuals seem to draw the conclusion that no precaution is taken aboard a battleship for saving life in case the ship is sunk in battle. This is not true. When a battleship is stripped for action there is certainly no place on her deck for boats that might be used for life saving. She has aboard, however, pneumatic rafts, and every man has his pneumatic belt, which would keep him afloat.

All Die with their Ship.

In time of battle, however, there is no time and no inclination to make use of these devices. When a battleship is hit and seriously damaged there is no way of knowing whether or not she is about to sink. It may be possible that she will remain afloat for hours, or that she may not sink at all. Her purpose is to continue to damage the enemy to the greatest possible extent. A single final shot from a sinking ship may be the blow that will turn the tide of battle and the destiny of empires.

A damaged battleship, therefore, continues to fight. The men remain in the fire rooms, in the turrets, at their guns. Every man continues that particular job which is his in fighting the ship as long as she may strike a blow. It therefore happens that when the battleship goes down there is practically nobody on deck, and there is no man who may leave his post in time to put on a life belt or launch a raft. Quite naturally, every man dies with the ship.

The theory of fighting the ship until the last moment seems to have been exemplified by practically all those that were sunk in the recent battle.

The battle of Skagerrack seems to have justified the position which has long been taken by the experts of the General Board of the American Navy, a position which has met the approval of most American authorities and which has been crystalized into the programme which America has followed. The General Board has recommended for fifteen years that the United States continue the policy of placing its chief reliance in big ships. Since the dreadnought came into being it has maintained that that vessel should be made the backbone of the fleet. If appropriations were sufficient to provide but one class of ships, the General Board has insisted that they be dreadnoughts.

American Programme Justified.

There is a constant tendency on the part of the public to go off at a tangent in its enthusiasm for the class of ship that at a given time is attracting wide attention. Last fall, for instance, the public clamoured for many submarines and favored disregarding appropriations for dreadnoughts or battle-cruisers. Later, the battle-cruiser has been attracting much attention to itself because the incidental clashes of the present war have been battles between scout ships. So the clamour this spring has been very largely for battle-cruisers.

The dreadnought has attracted very little attention because she has not heretofore been in the fighting. The public did not see that the very existence of British dreadnoughts in the North Sea resulted in the bottling up of all Germany. It did not generally realize that the battleship was performing its purpose without the necessity of fighting. The present clash, however, demonstrates that in the final issue it is the dreadnought which means victory or defeat.

This battle seems also to have proven the value of that other branch of the fighting fleet which has been given most attention in the American Navy, the destroyer. The many opportunities for usefulness of and the great possibilities of execution which rest with these little ships seem to have been demonstrated. The battle of Skagerrack seems to have shown that the United States has chosen wisely in selecting the units upon which she would depend in making a fleet from appropriations that made it possible to have all the units desired.

The usefulness of the battle-cruiser or the scout cruiser has not been disproven, but the inadvisability of depending upon the fast lightly armoured vessels in a clash in which dreadnoughts are engaged is shown. The cruiser is a necessity in any modern fleet unless that fleet is willing to grant certain advantages to its rivals which are provided with these fast ships. The theory that a time would come when they would displace dreadnoughts must, however, in the face of the new facts, be given over.

The battle of Skagerrack teaches less of the value of guns of various calibers than of most of the vital problems of the navy. All the fighting was close in. The marksmanship was, therefore, not very exacting. The test on the guns was not great. Any gun and almost any gunner ought to be able to make hits at six miles. The advantage attributed to British guns and gunners had little opportunity to demonstrate itself. Likewise are the results in ships sunk by the British cruisers and dreadnoughts still unknown. The deadliness of the great British 15-inch gun cannot yet be said to have been determined.—From *Sea Power* in *Scientific American*.



SLIDE-RULE FOR FINDING RANGE TO CLEAR CREST.

BY 2ND LIEUT. J. NOBLE KENNEDY, R.G.A.

THIS slide rule is designed to indicate the minimum elevation at which the trajectory of a 60-pr. shell will clear intervening crests of various heights with given Angles of Sight.

I venture to suggest that, in a moving battle, when new battery positions would frequently be chosen, this slide rule would assist the Battery Commander to ensure that his prospective targets were not in "dead ground," by performing the function of the oscillating sight as described in Pamphlet of 60-pr. Gun, 1916 (p. 26).

The slide rule can, of course, be adapted for any nature of gun by suitable graduation of the Range Slide. Its accuracy could be increased by graduation in half degrees and 500's of yards. It might be made more useful by attaching to the back some simple form of clinometer by means of which angles to crests could be measured in the field.

Description.

There are three scales :

The Upper Scale (fixed) is graduated at equal intervals in degrees. On this is set the angle to the crest (measured by map, director or otherwise).

The Middle Scale (movable) is similarly graduated in degrees. On this is set the Angle of Sight to the target.

The Lower Scale (movable) is graduated in thousands of yards of Range, the intervals being proportionate to the equivalent angular elevations as shown in Range Table.

The method of setting the slide rule is as follows :—

Put the Range to the Crest under the zero of the Upper Scale, using cursor.

Put the Angle of Sight under the Crest Angle.

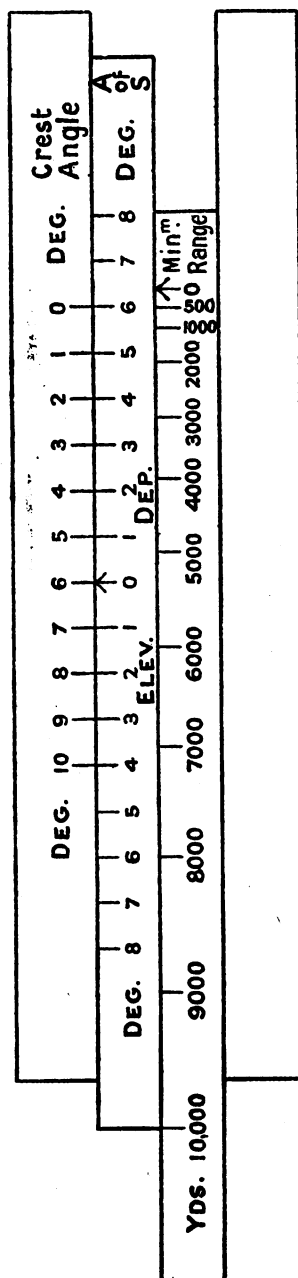
Read the minimum range to clear the crest under the zero of the Angle of Sight scale, using cursor.

An Example :

Range to Crest	500 ²
Angle to Crest	5°
Angle of Sight	1° Depression.

Using cursor, slide Range Scale along until 500 is under the zero of the Upper Scale. Slide Middle Scale until 1° Depression is under the 5 of the Upper Scale. Move cursor over the zero of the Middle Scale and read off the range required which is, say, 5300².

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NOTE.—I have heard of similar slide rules being in use but I do not think they make allowance for the Range to the Crest, without which they would not be accurate enough to be useful.

This slide rule in its original form was made at the Royal Military Academy in collaboration with Lieut. A. Jennings, R.H.A., to whom my acknowledgements are due.—J.N.K.

WIND DIAL CORRECTOR.

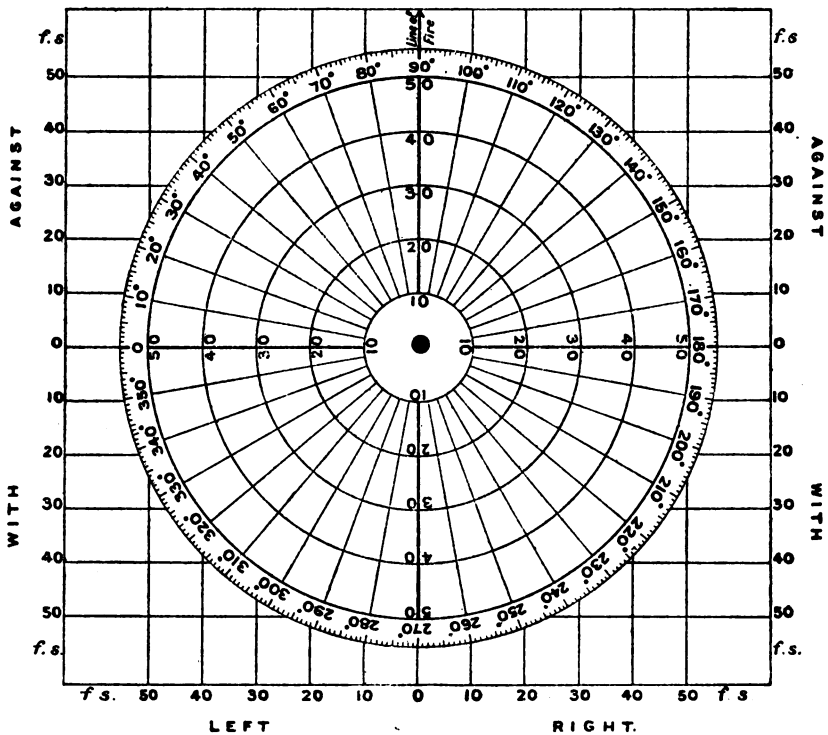
BY 2ND LIEUT. J. NOBLE KENNEDY, R.G.A.

I suggest that this Wind Dial Corrector will provide a simpler and more accurate method than the present one of determining the corrections necessary on account of wind.

The present system is to find :—

- (a). The component velocity along the line of fire (for use on B.C. Slide Rule), by means of the "Fall of Shot Diagram".
- (b). The deflection, by means of the "Wind Graph".

WIND DIAL CORRECTOR.



The drawbacks to this method are:—

(a). That a calculation is necessary to obtain the direction of the wind in relation to the line of fire—although simple, this seems, in practice, to present some difficulty; another calculation is introduced owing to the fact that the Wind Graph gives deflection for 10 f.s. only.

(b). That two separate operations must be carried out to arrive at the information required, and the whole method is too complicated.

The method proposed involves no calculation and is purely mechanical. It has been found much easier to explain to N.C.O's.

The table for conversion of "feet per second" to "minutes deflection" could be amplified and made more accurate. I have had no facilities for doing this myself. The table given is for 60-pr. gun.

Instructions.

Set dial so that True Bearing of Target coincides with "Line of Fire" at the top.

Note the radial line representing True Bearing of Wind, and the point in that line representing its velocity in f.s.

Read off components along and at right angles to "Line of Fire."

Use first component for B.C. Slide Rule.

Convert second component to deflection by means of table.

Example:—

True Bearing of Target 60° . Range 8,000.

Wind 40 f.s. at 180° .

Component for B.C. Slide Rule: 20 f.s. with.

Component at right angles to L.O.F.: 35 fs. right, which by table=(say) $42'$ right (between $36'$ and $48'$).

Table for Conversion of F.S. to Deflection.

Range.	10 f.s.	20 f.s.	30 f.s.	40 f.s.	50 f.s.
1000	—	—	—	5	8
2000	—	5	9	12	15
3000	5	10	15	20	25
4000	6	12	18	24	30
5000	8	16	25	32	40
6000	10	20	30	40	50
7000	10	22	34	45	55
8000	12	24	36	48	60
9000	13	26	39	52	65
10000	14	28	42	56	70

M.P.H.

F.S.

35	...	...	...	...	...	50
28	...	...	...	...	...	40
20	...	...	...	...	...	30
14	...	...	...	...	...	20
7	...	...	...	...	...	10

AN INTELLIGENCE REPORT ON THE FRENCH FRONTIER, 1775.

BY MAJOR CHARLES BOUVERIE THACKERAY, D.S.O., R.F.A.

THE following Letters lately came into the hands of the present writer, a descendant of their author, who has been asked to edit them for publication in the R.A. Journal. Perhaps some brother officers may find them as curious and interesting as he has himself.

The author, Lieut.-Colonel John Cleve Pleydell, a kinsman of Viscount Folkestone, (son-in-law and heir of Sir Mark Stuart Pleydell, Bart.) who was created Baron Pleydell-Bouverie and Earl of Radnor, was born about 1750 and joined the 1st Guards, of which regiment H.R.H. the Duke of Gloucester was then Colonel. These letters, addressed to the Adjutant General, were written in 1775, during a tour with the Duke. They were not published until 1795. Colonel Pleydell had evidently expended much care and labour on the production of this and other little works. The letters were published in a handsome thin quarto volume, without plans, sketches, or maps. But the originals of the latter, executed by himself, and intended for a future edition, are bound up in another copy of the book. They are wonderfully well done, with a painstaking care and finish that would do credit to the training of a twentieth century R.M.A. cadet. The Report itself is drawn up in the most approved style, combining the features of a Road Reconnaissance with an Intelligence Report, and contriving at the same time to be fairly interesting and entertaining. We know, of course, that the R.M.A. was then, though comparatively newly fledged, already turning out highly trained young officers. But it was a surprise to the present writer, and may be so to other readers, to find that so high a standard of specialized, as well as general, professional knowledge (e.g. topography, fortification, and artillery,) and so intelligent an application of it, was, at that period, reached by young officers, outside the scientific corps. The map (Plate I) reproduced is the Index map of the Tour. In the original each of the Sections is mapped on a large scale, 2 miles to the inch, and there are sketches of guns, plans of fortifications, and of the elaborate manœuvre formations, so dear to the heart of the soldier of those days. A few of these are reproduced here. Together with these two volumes are a large number of loose engravings of places visited during the royal tours, and also a large presentation volume of very beautiful etchings, painted in water colour, by M. Albani Beaumont, Professor of Drawing and Fortification to the

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King of Sardina. This book is dedicated, in the profuse style of the time, to the Duke of Gloucester, after one of these Tours. It may be news to some modern readers that our army was in alliance with that monarch in 1743, against the French and Spaniards. The professor calls to mind this alliance, and places a large plan of the allied operations round Nice, as a frontispiece to his volume of paintings, which was presented by the Duke to his equerry, Colonel Pleydell.

The present writer, having been invited to edit these papers, is in some perplexity. The whole book can be read in less than half an hour. But it is necessary to cut it down for publication. It is a pity to deprive it of some historical value by omitting the names of regiments and commanders, or to curtail the descriptions of the fortifications of the various places visited. To eliminate altogether some of the letters, or portions of the journey, spoils the continuity of the account. Many of the places visited will be known to British officers in Flanders and France under their present very different conditions, and they might be interested in these reflections of past days; whilst, should these pages catch the eye of any French officers, they might, perhaps, find in them something of historical value for regimental records. The writer's descriptions of the people and country are picturesque and shrewd, and the effect of the narrative is marred by omitting them. However, in order to bring this reprint into a smaller space, some topographical observations and details of fortifications and other matters have been curtailed. The reader can fill up the blanks with ravelins, bastions, lunettes, parallels, curtains,—after the fashion of a discussion between Uncle Toby and Corporal Trim in "*Tristram Shandy*." In fact the author makes a very good Captain Shandy. One notices, perhaps, a slightly pathetic personal ring in his tribute of praise to the training of officers in the *Régiment du Roy*, and other French military institutions, when he observes, "To the honour of France it may be said, it has produced more writers on the military art than all the other nations of Europe taken together." He is full of admiration for their brilliant corps of officers, and asks if this result is not in part due "if I may add, to the constant encouragement given to men of merit, and those who wish to distinguish themselves in their profession?" So far as the present writer knows he did not fill any high military appointments.

Colonel Pleydell concludes his introduction by observing, somewhat plaintively, I long since intended to have published the "whole, with the numerous drawings naturally connected with it,—but have been hitherto prevented by the greatness of the expence.

"A future publication must depend upon the reception such a "*novel mode of travelling* may meet with." It appears that this ambition was not reached,—at least the present writer has not been able to find copies of any enlarged works. It is, however, gratifying to think that, after a century and a half, his wish should be fulfilled, and his modest labours reach a far wider field than ever he could have anticipated, and at a time when the country he traversed is the scene of the greatest war in history. The "*LINE of COUNTRY comprized in the following OBSERVATIONS*" reads almost like an

index of the week's war news. Little did the writer think that along this line of country would be stretched a continuous line of trenches, much of it held by British armies, in support of their French allies, (some of it, for the moment, in German hands). The descendants of those famous French regiments, with their resounding titles, which he saw performing their marvellous evolutions on the parade grounds of Verdun or Nancy, are strewing the same ground with fresh laurels for Republican France; whilst the present bearers of the ancient names of their commanders, names which seem to focus all the splendour of the vanishing old French aristocracy of pre-Revolution days, are fighting gloriously among the rank and file.



MILITARY OBSERVATIONS
IN A
TOUR
THROUGH PART OF
FRANCE, FRENCH FLANDERS,
AND
LUXEMBOURG.

By J. C. PLEYDELL, ESQ.
Late Lieut.-Colonel, and Equerry to His Royal
Highness the Duke of Gloucester.

LONDON:

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And sold by F. Wingrave, in the *Strand*; T. Egerton, *Charing Cross*; J. Edwards, *Pall Mall*; J. Debrett, *Piccadilly*; R. Faulder, *New Bond Street*; G. G. and J. Robinson, *Paternoster Row*; J. Sewell, *Cornhill*; P. Hill, *Edinburgh*; and J. Archer, *Dublin*.

M.DCC.XCV.

INTRODUCTION.

A N Officer, in travelling through such a country as France, is insensibly led to regard it with a military eye. The many fortified towns, and numerous garrisons, with the excellent regulations in their Military Establishment, are objects which cannot escape his attention. Although the following Observations may be thought rather superficial, they have one advantage, that of being made upon the spot. Having had the honour of being in the suite of a Royal Personage, I could make use of my pencil without reserve, under His Auspices—nay, so little did my inquisitiveness offend M. de Gribeauval, who had the chief direction in the Annual Military Practice at La Fere, Verdun, and Metz, that he has more than once taken my memorandum-book, and written with his own hand answers to my numerous queries—no small condescension in the Great Defender of Schweidnitz!

The following Letters were written to the late Lieutenant-General Harvey, Adjutant-General of His Majesty's Forces, during a Tour to the Continent in the year 1775, being only part of a larger work continued in 1776 and 1777, through Swabia, the Tirol, and Italy. I long since intended to have published the whole, with the numerous drawings naturally connected with it—but have been hitherto prevented by the greatness of the expence.

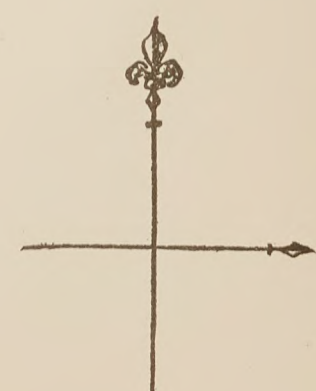
A future publication must depend upon the reception such a novel mode of travelling may meet with.

The LINE of COUNTRY comprized in the
following Observations.

Plate I.

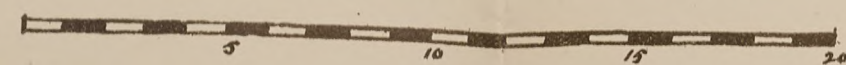
Calais.	Lower Picardy.
St. Omer,	Artois.
Mount Cassel,	
Bergues,	
Dunkirk,	
Returned to Mount Cassel.	
Lille,	French Flanders.
St. Amand.	
Valenciennes.	Hainault.
Cambray.	Cambray,
St. Quentin.	
La Fere.	Picardy.
Laon,	Isle of France.
Rheims.	
Chaalons,	Champagne.
Clermont en Argonne.	
Verdun,	Lorraine.
Metz,	
Thionville.	
Luxembourg,	Austrian Dominions.
Returned to Metz,	
Nancy,	
Luneville.	
Saarbourg,	Lorraine.
Phaltzbourg,	
Saverne.	
Strasbourg.	Alsace.

GENERAL direction of the Route from CALAIS to STRASBOURG, the Numbers referring to the SKETCHES on a large Scale.



Situation of PARIS.

Scale of common French Leagues, about 2 1/2 English Miles each.



LETTER I.

St. Omer, July.

SIR, -

To you, who are so well acquainted with France, and its military establishments, my cursory remarks must seem rather trivial: however, as you desired me to communicate to you by letter, from time to time, such observations as might prudently be committed to paper, I shall indulge myself in a task so pleasing, as obeying your commands must ever prove.

LETTER:
I.

Calais seems but indifferently built, and has rather an air of antiquity. The entrance of the harbour is much confined by two long jettées, lined with plank, as well as much incommoded by numerous sand-banks. The stockaded forts, near low-water-mark, are too small to be of much use, and are also too high above the level of the water.

The fortifications of the town and citadel seem kept in but indifferent order. The Duc de Crois at present commands there, who is considered as a man of great military talents. The Marquis de Leujacque was also there, on tour of duty, as inspector-general. The present garrison consists of the regiment Lionnois, four battalions; there being no cavalry, on account of the scarcity of forage. This regiment is to be soon formed into two, each composed of two battalions: one to bear the former title Lionnois, and the other that of Du Maine. They are to leave this place, after being inspected by the Marquis de Leujacque.

Some engineers are stationed there, as indeed in all the fortified towns; and a detachment of artillery.

The neighbourhood of Calais has a very barren aspect, though some parts are tolerably cultivated. The soil is light and sandy; but some of the meadows have the appearance of being rather of a marshy nature, from the many tufts of rushes and long grass scattered over them. They, however, abound in black cattle, of a small breed, and remarkably lean.

Pl. II.

The same kind of country continues towards Ardres, a small fortified town. . . . Between the village La Recousse and St. Omer are many quarries of chalk, or soft stone, which the natives make use of in building their houses. It is at first so soft, as to be easily cut with a hatchet; but hardens into perfect stone, after being for some time exposed to the air. The people, in general, are strong, and active, but extremely hard-favoured.

St. Omer is pleasantly situated upon the river Aa. It is considered as the second town in the province of Artois. The streets are straight, and well-built, and of a sufficient breadth—in every respect much superior to Calais. The fortifications are certainly defective—the curtains being immoderately long, and the flanks of the bastions uncommonly short. The curtains are, however, broken, by small circular projections.

St. Omer.

LETTER
I.

M. de La Motte is the present commandant; and the regiment de Normandie, two battalions, compose the garrison.

The gate towards Mount Cassel is covered by a small detached work, from whence a high raised causeway is carried for a considerable distance over some low watery meadows, which in a wet season are generally flooded. The want of trees and inclosures gives a great nakedness to the country.

LETTER II.

Dunkirk.

SIR,

LETTER
II.

You will smile at my giving you a description of the fortifications of the towns, as well as affecting to play the critic. Plans of them may, indeed, be had, at every print-shop in Paris; but as the strength of every place depends, in a great measure, on its situation, my remarks chiefly tend to that point.

From St. Omer the same flat open country continues towards Mount Cassel; . . . we crossed two small branches of the river Aa, and soon after another stream; when I observed the ground to become broken and irregular, with much wood scattered along the skirts of the hill upon which Mount Cassel is situated. This hill forms a most picturesque object, in the midst of so level a country. The sides of it are very unequal, and mostly covered with wood. We found the ascent very steep.

Mount
Cassel.

Mount Cassel was once a place of some note, being built on a hill, in a most commanding situation. At present, the fortifications are gone entirely to decay. The mound where the citadel stood, is at the upper part of the town, from whence I plainly saw near thirty fortified cities. . . . No troops are stationed there.

Bergues.

Although Dunkirk lay out of the intended route, I could not resist my desire to see a place about which I had heard and read so much. There is almost a continued descent from Mount Cassel to Bergues, by raised causeway, . . . The two small square forts on the opposite side of the canal, are chiefly dépôts for military stores. There are ferry-boats at each, with stages for landing powder, ordnance, &c. Fort François has one ravelin on the side next the canal, with four bastions, and a stone revetement: the other, Fort Louis, has three ravelins, but none on the curtain towards the canal, and no revetement; with four bastions, as Fort François. Many store-houses are built in each.

Dunkirk seems populous, but is very irregularly built. The fortifications are kept in indifferent order. Fort Risban, on the right of the harbour, is quite destroyed, and now only a heap of rubbish, as well as the citadel; though some houses remain standing in the latter. . . . The canal of Furnes runs through the middle of the town into the lower harbour; but the canal of Bergues empties itself into the upper harbour, by a sluice or flood-gate. By this back-water, the harbour was formerly cleansed; but as by treaty, it must be incapable of receiving large vessels, the back-water is not only neglected, but the upper harbour is intirely dismantled, and the stones it was lined with piled in heaps. There is a double draw-bridge over the canal of Bergues, near the flood-gate. A wooden bridge divides the upper and lower harbours; and there is another between the lower harbour and Royal Bason, which formerly received ships of war. The latter is almost filled with mud, . . . On one side of the Royal Bason, is a row of cazernes, and storehouses on the other: the Royal Magazine is placed at the upper end. Great part of these buildings is let out as common storehouses: in the rest, are great quantities of old gun-carriages, &c. belonging to government.

LETTER
II.

Dunkirk.

Pl. III.

LETTER III.

Lille.

SIR,

My last letter would acquaint you with the reason of a small deviation from our proposed route; but indeed, independent of my own curiosity, I remember you desired me to look into Dunkirk, if it should at all lie in my way. Being quite alone in that little excursion, I did not care to seem too inquisitive. By mere accident I fell into company with one of the officers of the garrison, who seeing me in my uniform, very politely offered himself as my Cicerone. However, I was obliged to trust to a retentive memory for the observations I sent you. I well know you will make necessary allowances.

LETTER
III.

I returned next day by Bergues to Mount Cassel, and found the country from thence to Lille very different from that I had already passed over—it is in general well cultivated; . . . Soon after descending from Mount Cassel, no height is to be seen, except a remarkable rising upon the left, with a great many wind-mills. There is a beautiful little forest of oak at Fleteren, running also to the left; . . . Though St. Silvestre Capple, Fleteren, and Mettren, are but inconsiderable villages, yet they are clean, and neatly built. Bailleul is rather a small town, on a gentle ascent; but Armentiere, upon the river L^e, Armentiere.

LETTER
III.

is regularly fortified. The bridge appears to be lately erected. The river, which is broad and deep, runs in a fine vale; and to the left, for above a mile, has so straight a course, that it has all the effect of a magnificent canal.

PL. IV.

The same fine improved country continues quite to Lille, almost perfectly level; the road good, and planted on each side with rows of trees. Upon the whole, I cannot help observing, French Flanders is one of the most plentiful countries I have ever seen. You must not be angry with me for not excepting England.

Lille.

Lille, the capital of French Flanders, is situated upon the river Deule, in a flat extended bottom. It is large, and regularly built, with an air of elegance and neatness I have not hitherto met with in this country. The fortifications are reckoned very formidable, particularly those of the citadel, the *chef-d'œuvre* of the great Vauban. There is a fine esplanade between the citadel and the town, where the garrison generally perform their exercise; but reviews are exhibited in a large plain, seven miles distant. I much admired the barracks, which are indeed noble piles of building, as well as the great military hospital.

The present garrison consists of one regiment of cavalry, three squadrons, Marq. de Castrie's; and nine battalions of infantry, viz. La Marinne, two battalions (the other two being detached, one at Paris, and one at Martinique); La Guyenne, three battalions, (one having embarked for Martinique) La Rouergue, two battalions; and Royal Comtoi, two battalions.

PL. V.

I saw the nine battalions drawn up upon the esplanade, in one line, but formed *en potence*, for want of room. They are a good body of men, and extremely well appointed; but seemed unsteady, and not sufficiently attentive to their officers. A battalion de modele, formed of detachments from all the battalions, and put under the direction of a major in the French guards, went through what they call their new manœuvres. Adjutants from all the neighbouring garrisons were present, by order of His Majesty. However, I could perceive little new, nor was any thing done with precision—perhaps, owing to the men of so many different regiments not being yet accustomed to act together.

The cavalry performed their evolutions with great rapidity, always wheeling at full gallop. The men rather too large for their horses.

LETTER IV.

St. Quentin.

Pl. VI.

From Lille, towards St. Amand, the country is flat and open,

LETTER
IV.

St. Amand is situated upon the river Scharp, formerly strongly fortified, but now dismantled, and of little note, except on account of its cathedral, a most magnificent Gothic pile. Part of the forest called Bois de St. Amand, lies between this place and Valenciennes.

St. Amand.

The situation of Valenciennes must make it rather unhealthy, lying in a flat marshy bottom, subject to be overflowed by the Escaut or Scheld. It is strongly fortified, but appears to be commanded by the high ground on the North of the town, to the right as we descended to the bridge. The fortifications are extensive; the bastions flat, with orillions; and the flanks very short. In the citadel are long cavaliers behind the curtain, though they do not prevent its being in part commanded by the before-mentioned rising ground to the North. They had once thoughts of occupying that height by a large redoubt. On that side, the ditches are of an unusual breadth, and the ravelins of course very distant from curtain. There is a *battre-d'eau* in the ditch, with flood-gates or sluices. The garrison consists of one regiment of cavalry, three squadrons, Royal Etrangers; and three regiments of infantry, The cavalry seem in excellent order. The regiment of Dillon is mostly composed of Germans; but the officers are all Irish. This is in every respect a finer body of men than the regiments Dauphin and Medoc.

Valenciennes

Towards Cambray, the line of road as far as Rouvigny keeps along that gentle rising North of the Scheld. There is a bridge over the Scheld, a little beyond Rouvigny, with the city of Bouchain, about a mile on the right, in the midst of low watery meadows.

Cambray, upon the Scheld, is situated much as Valenciennes. It is pretty extensive, but has a great air of antiquity. The fortifications are kept in very indifferent order, and in many places quite decayed. They are at present busy in repairing them, particularly near the gate, as we entered from Valenciennes, where a considerable length of the curtain has tumbled into the ditch. I cannot help observing, that the curtains are in general of a most immoderate extension, and the faces of the bastions but weakly defended. One regiment of cavalry (d'Artois) and two regiments of infantry, de Bretagne and de Berwick, (Irish) two battalions each, compose the garrison. The officers of the regiments of Dillon and Berwick told me, that they soon expected a change would be made in the establishment of those regiments.

Cambray.

For many miles, the country is open, and little cultivated,

LETTER
IV.

Pl. VII.

No. 1
and 2.

the soil being poor and chalky, much like some of our downs. Near the source of the Scheldt, at the village of Creancourt, is a fine rich vale; and a little further, is one of the shafts of the subterranean canal, which joins the Scheldt and the Somme.* This work has been carried on for several years, and, when finished, must be very beneficial to the interior commerce of the country. The whole length of the canal is 7,020 French toises, near eight miles. There are sixty-nine shafts for the admission of light, as well as air; and where they pass through a stratum of earth, or common mould, are lined with stone; but in general, the canal runs in a bed of chalk and flinty rock. The breadth is twenty feet, and sixteen feet from the surface of the water to the top of the arch. A small part only is finished.

St. Quentin.

St. Quentin is situated on a gentle elevation, upon the river Somme, near its source. Though now entirely neglected, it was formerly a place of considerable strength. It is only inclosed by an old wall, with round towers. The ditch is uncommonly broad, and there are still remains to be seen of ravelins and other out-works, which seem to have been constructed merely of earth. No troops are ever stationed here. The inhabitants are chiefly Protestants, who employ themselves in the cambric manufactory, and enjoy some particular privileges, on account of their constant attachment to the crown.

LETTER V.

Rheims.

LETTER
V.

La Fere.

From St. Quentin, towards La Fere, the same kind of open flat country continues . . . the vale and river of Oyse being soon discovered to the left, the line of road making a considerable sweep to that side, before descending to La Fere.

* The tunnel which Colonel Pleydell describes in course of construction forms an important link in the great waterway system of France. The St. Quentin canal connects the Oise near Channy with the Somme and the Scheldt, ending at Cambrai, 93 kilometres. In the Northern section, between the Somme and the Scheldt, are two subterranean piercings, the Tronquoy tunnel (1099. m.) and the Riqueval tunnel (5677. m.), and the canal of Torrents, the two last meeting near Le Catelet. The latter was dug in the dried up bed of the old Scheldt. It is partly fed from *riots secs* (that is, ravines dry except after heavy rains), whose muddy pluvial waters go to mingle with the limpid waters of the Scheldt, near its source. Passing northwards the canal runs besides the Scheldt, from which it is mainly fed by sluices. In the southern section, the basins of the Somme and the Oise, at the Jussy sluice, are connected without great engineering difficulty, by a simple channel across the plateau forming the water parting. These, with various irrigation works form a vast canal system, establishing through communication between the basins of the Scheldt, Sambre, Somme, Seine, Oise; and the rich countries of Flanders.

The St. Quentin, or Crozat, (as it is often called) canal, was first dug by a Sieur Crozat in 1728, but was soon abandoned on account of expense. This portion of the work was completed by the State in 1767. But in order to get full economical value out of the work it was decided to link the Somme and the Scheldt by an underground canal, on the proposal of the engineer Laurent, in 1769.

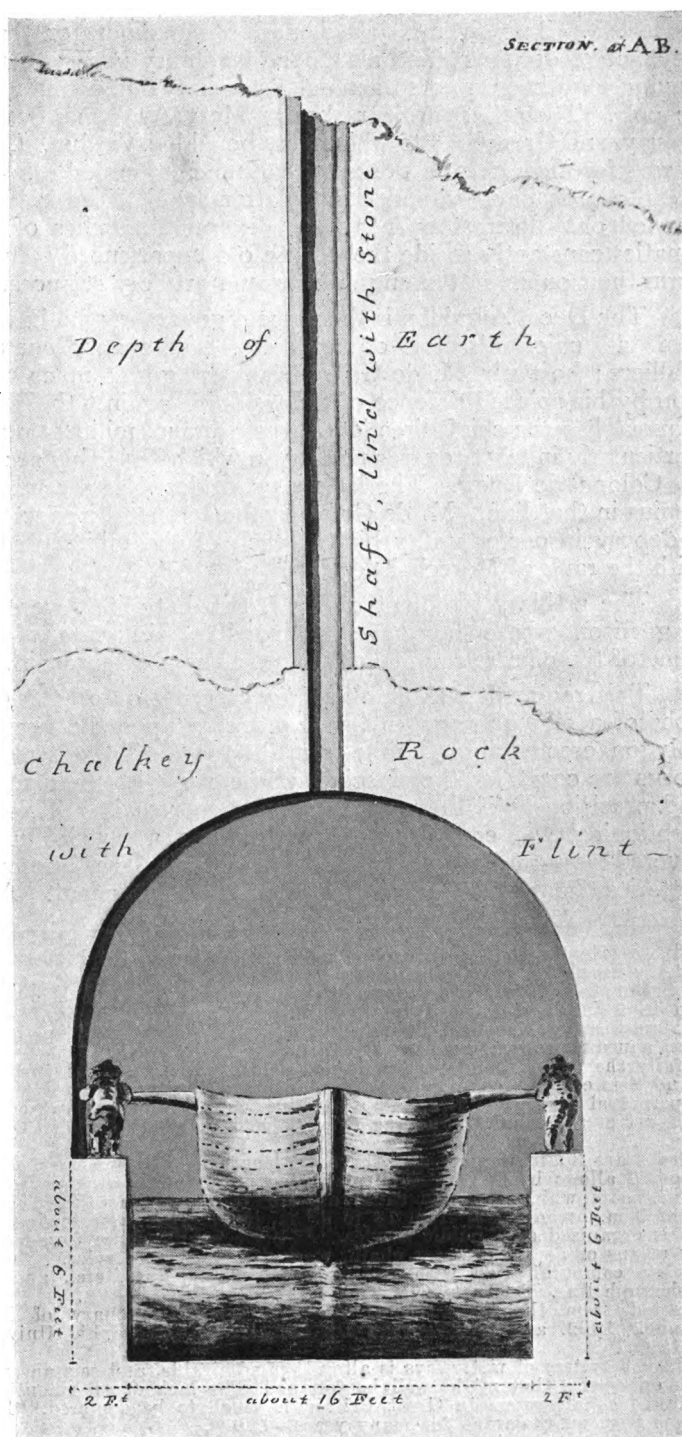


PLATE VII. No. 2.

LETTER

V.

PL. VIII.

. . . . The river is broad, and commodious for the conveyance of ordnance, and all kinds of military stores, this place having long been a noted arsenal, as well as one of the military schools. The others are Strasbourg, Metz, Auxonne, Besançon, Douay, and Grenoble; to which may be added Verdun. La Fere is well fortified, but the works are not much attended to. There is an air of poverty and depopulation, as if little trade was carried on. Professors in all the different branches of mathematics constantly reside there, with old experienced officers, to form their pupils in the engineering and artillery sciences.

The Duc d'Aiguillon is the present governor, who has under him, as chief director of artillery, Lieutenant-General de Valliere; however, M. de Gribeauval, who got so much reputation by his spirited defence of Schweidnitz, against the King of Prussia, has the chief direction in their annual military practice, particularly in what regards mining, in which he is ably seconded by Colonel de Rugy. The latter is considered as a remarkable genius in that line. M. de Gribeauval, as general inspector, has a deputy inspector under him at each of the military schools, with the rank of Marechal de Camp.

The artillery regiment of Metz, two battalions were there in garrison, where they have continued for six years, of which some of the officers complained to me as a great hardship.

This regiment was employed in carrying on all the operations of a regular siege, in the approaches upon the front of a polygon, erected about a mile from the town. These temporary works are constructed of fascines and earth, with the same care and precision as if they were intended to remain. This I am mentioning, was composed of two bastions, a ravelin, lunettes, covered-way, and glacis. The different parallels, approaches, batteries, &c. seemed traced out with great judgment. As the

This work, so bold for that time, excited public attention in the highest degree, and became the object of a pilgrimage on the part of the savants of many countries. But Laurent's death stopped the enterprise in 1773. It was again taken up in 1802, and finished in 1810, by the engineer Gayant, who was signally rewarded by Napoleon. In 1826 the work was greatly improved by making an aqueduct connecting with the Oise.

Naturally the underground portion is now-a-days well lighted. It was not so always, and "its crossing caused such alarm to boatmen that it was necessary to promise perpetual exemption from all canal dues to the first boat which would cross this part of the canal." Judging from Colonel Pleydell's sketch this is not surprising.

The locks are 35 in number and the total length is 93 kilometres. The St. Quentin canal allows boats drawing 2 metres to pass, with towing paths by its sides. The boats which use this canal are for the most part "péniches," or pinnaces of 5 m. breadth and from 14 to 39 m. long. The horse towing on the two sides is organized as a public service. At some points steam towage is provided, by means of an under-water chain, worked as a State service. The canal has complete communication with the railways, with cranes, etc., and has a special telegraph line. 80 boats pass each lock every day.

(Extracted from the *Geographical Administrative Dictionary of France*. Paul Joanne. 1902. and the *Nouveau Dictionnaire de Géographie Universelle*. Vol. V. 1892.)

The French system of waterways is altogether admirable, and sets an example to British enterprise that might well be followed. The lack of an extensive and well regulated canal system in Great Britain is much to be deplored. Such as it is, it has been on the wane for many years.—C.B.T.

soil is light and sandy, the inside of the approaches and parallels was neatly lined with plank. Both officers and men seemed as much animated as if they had been in the presence of an enemy. I could not help admiring the zeal and attention of the young pupils.

LETTER
V.

Such exercises, in time of peace, are certainly most conducive to the good of the service, by keeping alive a professional spirit, particularly under the direction of so able a general. It must be allowed, the French excel most other nations in the engineer line—if not in tactics.

I had also the satisfaction of seeing the same regiment practise their whole artillery exercise in a large plain, where they had erected several batteries for great guns, *en-barbet*, and with *embrasures*; as well as for mortars. Butts were raised at certain distances, with figures made of straw, to represent lines of troops. Their firing *en-ricochet* was what I chiefly admired. They shewed great skill and judgment.

Pl. IX.
No. 1
and 2.

Between La Fere and Laon, is a very remarkable range of high country, running in a direction nearly North and South.

Laon, capital of the Laonnois, is built upon a hill, in a large extended plain, and with its spires and convents forms a singular object. The ascent is considerable on every side. It is under the government of the Duc de Tresmes, and four squadrons of dragoons are there in garrison. I am sorry I can add little more concerning this place, as we only changed horses at the bottom of the hill.

Towards Rheims, there is another remarkable range of hills, between Laon and the river Aisne, Soon after leaving the village of Corbiny, a flat country commences, when the river Aisne is crossed by a ferry, at the little village Berry-au-Bacq. The bank on the South side now becomes commanding, as far as the eye can reach.

The city of Rheims is situated in an extended flat, with a remarkable height on the West side, beyond the river Vesle. It is the capital of the province of Champagne, and looked upon as one of the finest cities of France. The cathedral where the Kings of France are always crowned, is an highly ornamented Gothic pile. As for the fortifications, they seem much neglected, being suffered even to moulder away in some places, for want of timely repair.

ARTILLERY = Practice at LA FERRE.

SECTION thro' the middle of the Embrasure — Gun with a third wheel running in a Groove — intended for Firing in the Night —

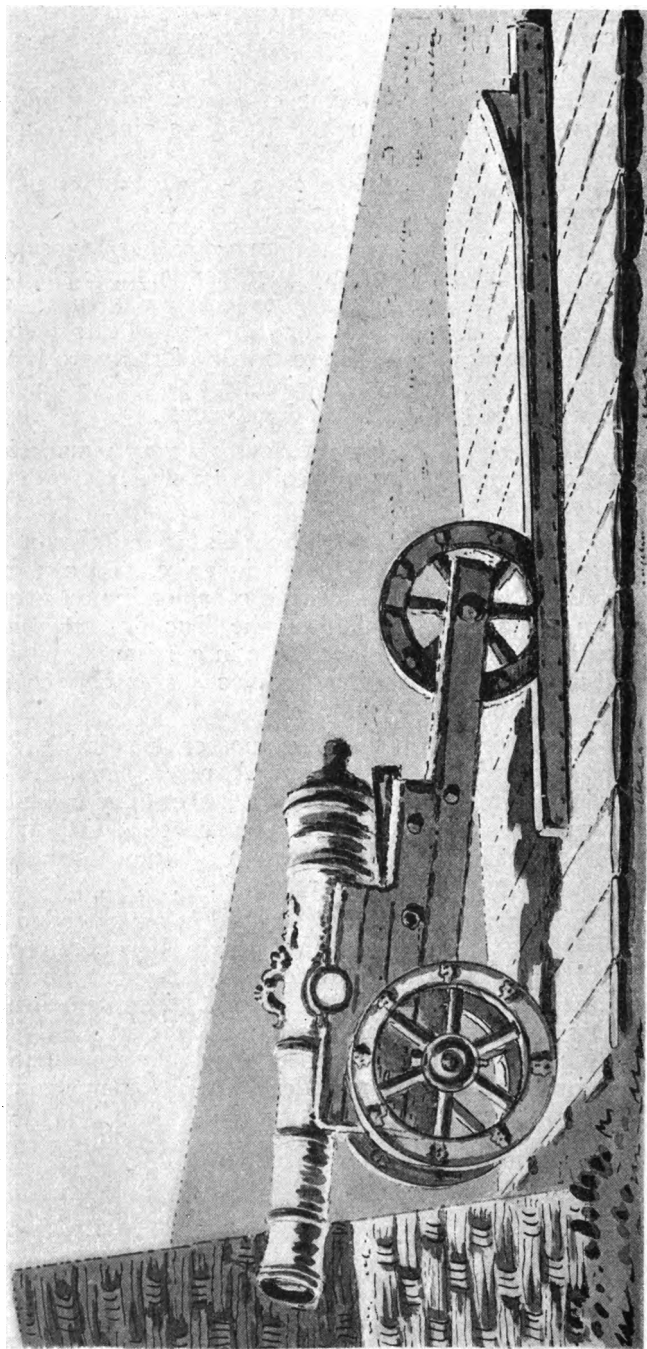


PLATE IX. No. 1.

LETTER VI.

Verdun.

There is, necessarily, such a sameness in my letters, that I almost despair of being able to keep up your attention, my remarks being chiefly confined to objects of a military kind. Indeed, no country in Europe furnishes more in this line than France; however, to avoid being tedious, I will not be too particular.

LETTER.
VI.

Pl. X.

It is almost one continued flat from Rheims to Chaalons. The river Vesle is crossed about five miles from the former. The banks are well wooded, and near the village Les-Petites-Loges, some heights covered with trees, run off to the right. Many small villages are scattered over this plain; and approaching Chaalons, it is much inclosed, particularly along the river Marne.

Chaalons has much the air of a German town, being built almost entirely of wood, with the ends of the houses towards the streets, as at Bremen, &c. It is very badly paved, and the streets narrow. They are now erecting a magnificent town-house. . . . The Chevalier de Crancé de Loisy is what they call governor-commandant; but only one company of the Gardes-du-Corps is stationed there, consisting of four hundred men, commanded by an Exempt. The fortifications are in very indifferent repair. Near the town are some fine public walks.

The same flat open country continues to St. Menehoud, which lies in a little vale upon the river Aisne. A marshy bottom opens to the right, soon after leaving Chaalons, still enlarging as we approached the former. Descending to the town a formidable defile appears to the right, the banks of the Aisne becoming very commanding. St. Menehoud is but small, nor are any troops stationed there: however, there is a governor, Comte Despiès.

St.
Menehoud.

Nothing can be more beautiful and romantic than the hilly country between this place and Clermont-en-Argonne, forming a very strong pass near the latter. There is abundance of wood, interspersed with pleasant little vallies and arable land. This tract is very extensive, and goes by the name of the Forest of Argonne, lying chiefly in the district called the Clermontois.

Clermont-
en-
Argonne.

There is a great descent to Verdun, situated in a marshy bottom, on the banks of the river Meuse, which is very broad: It is the chief town in the Verdunois, in the province of Lorraine, and seems strongly fortified, with a large citadel, but is certainly commanded by the neighbouring heights. The works appear old, and in some places decayed. They are at present repairing them near the esplanade. I observed many cracks in the ramparts of the citadel, which are constructed with too little

Verdun.

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talus—indeed they are almost perpendicular. The town is large and populous.

The barracks are extensive buildings; those for the cavalry are particularly excellent. The bishop's palace is upon a fine rising ground, with a beautiful terrace over the river Meuse. The banks are flat; the soil clay, mixed with sand; but on each side of this vale, there is a gentle rise, mostly covered with wood.

The Marquis de Chazeron is governor both of the town and citadel. The garrison consists of one regiment of cavalry, Royal Piemont, and four battalions of infantry, viz. regiment Poitou, two battalions; and a Swiss regiment, Castella, two battalions: there are also seven companies of miners.

As they were at this time carrying on their annual practice of mining, the front of a polygon, to a very large scale, was constructed near the citadel. M. de Gribeauval was just arrived from La Fere, with Colonel de Rugy. Every part of that branch of engineering was fully illustrated in a masterly stile. The galleries were numerous, running in various directions from the main gallery, under the places of arms and covered-way, to a great distance beyond the glacis. They seemed to avoid all capitals. The uprights and cross-beams were joined with the greatest neatness, and the whole lining of the galleries most compactly finished. The passage to the great ditch, under the curtain of the work, was elegantly vaulted with freestone.

The seven companies of miners are sufficient to supply all the reliefs, though the work is so extensive. A great many young officers, engineers as well as others, constantly attend. The corps of miners, is composed of excellent workmen, carpenters, masons, &c. As the soil of this spot is a compact gravel mixed with hard clay, the mining is attended with a considerable degree of labour.

The regiment of cavalry was the best I had yet seen in every respect; and the four battalions of infantry uncommonly good. The regiment of Swiss are of a larger size than the national troops.*

* The following extract from the *Times* of September 13th, 1916, is interesting as a study in contrasts:—

Verdun lies very still within the old ramparts of Vauban. Barbed-wire trenches scar the favoured promenade and the playing ground of the families now scattered through France. Gaping walls and cracked cellars show glimpses of twisted bedsteads in broken homes; the red roofs, where roofs remain, are littered with tiles torn up and shattered by explosion; in the streets are scattered the earth and stones sent flying by the morning "hate."

Verdun has not suffered as Ypres has suffered, but, lest the enemy should read in this an invitation to increase the daily ration of a hundred shells or so, it should be stated that the work of making the town uninhabitable has been very thoroughly accomplished. Only one building remains untouched, and in this town made famous by its bombardment, the intact house is treated as a "sight" to be shown to all visitors.

In the centre of the town, where the bombardment was heaviest, little remains of modern Verdun, but much has come to light of the ancient city where Rome

planted one of her grim sentinels of Empire. Here the enemy's guns excavated through the living down to the dead, and the destruction of all houses laid bare an old Roman wall the existence of which had been quite unsuspected. It is now uncovered along the whole mile and a quarter of its circumference. From this old wall, so far undented by Krupp, there stretch out the circles of defence of successive civilizations. First come the grass mounds and masonry fortifications of Vauban; then the inner line of the forts which were modern when this war broke out; then trench after trench, field after field, of barbed wire seam the plain and mount in terraces upon the ring of hills towards the crest and ridges, the stubbled fields which once were the green woods of the Meuse, to the grim line, marked by trailing veils of smoke and fume, where trenches no longer exist, and the men huddle down under what cover they can get in the craters of shell and of mine. The country for miles around is blasted and scorched; in every village there are ruins; yet there is the feeling of spring in the air, the sap of victory is rising.

Verdun is an ancient and historical town. The first event which renders it famous was the compact, known as the Treaty of Verdun, A.D. 843, by which the vast empire of Charlemagne (d. 814) was divided between his successors, the three brothers Charles, the Bavarian Louis le Debonnaire, and Lothair. In broad terms Louis received Germany as far as the Rhine, Charles the Southern and Western Gallic provinces to the Pyrenees, Lothair Italy and Eastern Gaul, with the title of Emperor. This latter included a strange polyglot strip of heterogeneous races between Gaul and Germany, from the Alps to the Scheldt, including Lorraine (Lotharingia). "Thus perished the grand imperial conception of Charles the Great, and thus, in its stead, began the nations of Europe."

The Bishopric dates from the 3rd century. In the 10th century Verdun was conquered by Germany, and with Toul and Metz, formed the territory of the *Trois Evêchés*, which was taken by Henry II of France in 1552, when it became a Free City of the Empire. It was ceded to France by the Treaty of Münster in 1648, and was fortified by the greatest of engineers, Vauban, about the end of the 17th century.

In 1792 the inhabitants compelled the commandant to surrender to the Prussians. Of the three senior officers one committed suicide, one was guillotined, and one entered the Prussian service. The Revolutionary Government punished the surrender by the execution of many inhabitants, including 14 ladies who had formed a deputation to the King of Prussia, begging him not to submit the town to pillage. It was evacuated by the Prussians after the defeat of Valmy.

From 1803 it was for 11 years the place of confinement of many English civilian prisoners seized by Napoleon.

In the Franco-Prussian War this small antiquated fortress of Vauban was defended by General Guérin de Waldersbach, and gave the Germans much trouble, lying as it did in their direct march to Paris. In this respect history has gloriously repeated itself, but the sad sequel is now being avenged. It was invested on 25th Sept., 1870, but was not bombarded until Oct. 14th. The French replied with spirit, silenced the enemy's guns, and spiked many in a sortie. The Germans having been reinforced, the place, which was much damaged, surrendered on 8th November, with a garrison of 4,000 men and 136 guns. It was evacuated in August 1873.

In 1875 General Serré de Rivière made it the left of the new Meuse Line barrier of fortifications, when it became a fortress surrounded by detached forts, eventually numbering 16 large and 20 smaller works, with a perimeter of 30 miles, and a greatest diameter of the fort ring of 9 miles.

Sébastien le Prestre de Vauban, 1633–1707, Marshal of France, sprang from a peasant origin. He was commissioned *ingenieur du Roi* by Louis XIV for distinguished war services. He rose to the highest ranks, and conducted a multitude of successful sieges. His chief claim to renown really rests on his system of attacking strong places, by a systematic approach by parallels and mining, (said to have been derived from the Turks,) more than on his systems of fortification. Vauban wrote many works on the *Attaque and Défense des Places*, which formed the classic foundation of military engineering for two centuries, and his "first system of fortification," later modified by his "second system," remained the accepted standard until quite recent times. *Ricochet* fire was first used by him with conspicuous success, though its full use was at first hindered by the jealousy of the artillery towards outside interference.

In his later days his influence waned. His rank was too high for him to supervise personally the conduct of military operations. Some of the places designed by him fell. His treatise, "*De la défense des places*," only made him the more unpopular, and he died broken-hearted. This great man was a devoted champion of the then unvoiced cause of the peasantry of France.

(References, Kitchin's History of France and the Encyclopædia Britannica 1911).—C.B.T.

LETTER VII.

Metz.

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VII.

The range of high country between Verdun and Metz, dividing the great plains of the Meuse and Moselle, very much resembles that between St. Menehoud and Verdun.

Pl. XI.

There is a very formidable ravine two leagues on this side Metz, running North and South to a great extent, with much brushwood. The road is cut in the sides, with infinite labour, a small brook winding in the bottom. The banks are so very bold, that the ravine is impracticable at any other place, at least for a considerable way, both to the North and South, the heights forming an excellent position for an army. As we descended to the plain of the Moselle, another ravine appears upon the left, running nearly parallel to the road.

Metz.

The city of Metz, upon the Moselle, is one of the largest in France, but seems old and indifferently built. It is the capital of the province of Lorraine, and was once Imperial. The streets are narrow, and very irregular. The Moselle is here navigable for large barges. What they call the old fortifications, are much neglected, and in some places even mouldering away; but those on the West side of the river, and between two of its branches, seem in good condition. The citadel is very extensive, but its ramparts totally out of repair; indeed it is so badly constructed in many respects, that they no longer consider it as adding to the strength of the place; but have erected a very formidable work, at an immense expence, called *Belle-Croix*, on a fine commanding height, East of the city. The whole is excellently casmated, and the galleries of communication roomy and well finished; but did not appear to me to be sufficiently ventilated. The fort Belle-Croix includes sufficient space for the encampment of a small army, and is well covered on the North and South sides. The works are finished with great solidity. The galleries under the covered-way and glacis branch out in various directions, far beyond the latter, so that an approach of an enemy would be attended with much hazard. In the entrenchment de Guise, in the rear of Belle-Croix, is their great dépôt of military stores, ordnance, ammunition, &c., &c.

There are two bridges over the chief branch of the Moselle, of a great length, covered by the lines on the West side. The barracks and great store-houses are also in this quarter of the town, as well as the military hospital. The barracks are very commodious, and the stables roomy and well aired. I observed the store-houses were remarkably dry, and are very extensive. I much admired the great military hospital, which is indeed a magnificent building, though in a plain simple stile. That front towards the river is particularly elegant. It is capable of

receiving a vast number of patients; and the wards and offices are airy and well contrived.

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The armoury contains arms for near ten thousand men: they are kept in very good condition. Among them are many musketoons and wall-pieces. As for the ordnance, they keep it all dismounted and exactly ranged, according to the calibres of the guns.

The carriages are carefully preserved from the weather. in store-houses, as nothing injures them more than being constantly exposed. They seem mostly new, great numbers of work-men being at present employed upon them. The timbers and iron-work are very massy, and the wheels very substantial, which in service is a material point. The forges, furnaces, &c. are still in the old citadel; but these, as well as all the stores in general, will be removed to the Entrenchment de Guise, as soon as they can be received. The new preparations are carrying on with great diligence. This great dépôt is not only well covered by the works of Belle-Croix, but has an easy communication with the river.

The pontoons, as well as their carriages, appear perfectly new. There is an immense quantity of shells, as well as shot of all sizes, regularly piled up; and I must confess, the military apparatus of every kind is kept in most excellent order, and appears to be in vast abundance.

LETTER VIII.

SIR,

Metz.

As my last letter was likely to have been spun out to a most unconscionable length, I deferred what I had more to say of Metz to my next.

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The Marshal Duc de Broglie is the present governor, both of town and citadel, and the Comte de Broglie, commandant-en-chef. The chief engineer, M. de Chambre, as well as the directeur des fortifications, M. d'Aubigny, are men of great reputation. The garrison consists of two regiments of cavalry, viz. Regiment Royal, three squadrons; and Regiment Noailles, three squadrons—and five regiments of infantry, viz. Bearn, four battalions; Limosin, two battalions; La Couronne, two battalions; La Sarre, two battalions; and Bourgogne, two battalions; with the regiment de Strasbourg (artillery) two battalions.

The school of artillery is under the immediate direction of the Baron de Lamy, with three captains as assistants; and M. Perrin des Almons is the chief director of artillery, with a sub-director; and three captains, who have the particular charge of the Arsenal.

Lieutenant-General M. de Gribeauval soon arrived at Metz; for I before informed you that he had the chief inspection of all the engineering, as well as artillery practice. M. de Villepatour,

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VIII.

one of the general inspectors, had been there some time. Several large fascine batteries were already constructed in a large meadow near the town, called the Ban St. Martin; with targets at various distances.

The practice was very general; great guns of different calibres; a variety of field-pieces, mortars, and howitzers, of almost every kind and size, as well point blank, as en ricochet—yet I must observe, upon the whole, though the men were sufficiently active in manœuvring the guns, and the firing was performed with tolerable precision, I by no means think this day's practice surpassed what I have frequently seen at Woolwich. Indeed they were very expert in the exercise of mounting and dismounting the largest pieces of ordnance; dragging them out of a (supposed) slough, and from the bottom of the ditch of the battery.

The cavalry are young and active, but the horses, which they get chiefly from Normandy, are small, and rather too slight. They performed all their evolutions with wonderful rapidity.

The regiments of infantry are, in general, fine bodies of men; but in many manœuvres I was present at, they seemed unsteady under arms. The manner of giving the word Halt! before allignement, has a very bad effect, and occasions much shuffling. I must, once for all, observe, that unsoldier-like custom, of the men being permitted to talk in the ranks. This is almost an universal practice with the French.—An absolute silence is one great principle of the Prussian discipline.

The citadel is constantly garrisoned by two battalions, though the barracks are in the most wretched condition. They affect to let every thing in this neglected fort run to decay.

I will only add, that in a grand manœuvre performed by the infantry, the four battalions of the Regiment de Bearn, infinitely excelled the others:

(To be continued).

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